Funding Trends and Support of Core Values

NIDDK's core values emphasize maintaining a strong investigator-initiated R01 program, preserving a stable pool of talented new investigators, supporting key clinical studies and trials, and continuing strong support of training and career development programs, consistent with the vision of NIDDK Director, Dr. Griffin P. Rodgers (see Director's Message).

At the NIDDK's May 2012 Advisory Council meeting, NIDDK Deputy Director, Dr. Gregory Germino, highlighted these values and reviewed the NIDDK's resource focus on areas supporting the core values.

Following that presentation, the NIDDK generated additional data on application and funding trends to help our research community understand application and funding dynamics over recent years and demonstrate the NIDDK's commitment to research and programs associated with the NIDDK's core values and posted these data on this site. The data shown here were more recently updated to include Fiscal Year 2014. The NIDDK will continue to update these charts as new data become available.

NIDDK FUNDING OUTCOMES FOR FISCAL YEAR (FY) 2014 AND HISTORICAL APPLICATION AND FUNDING TRENDS

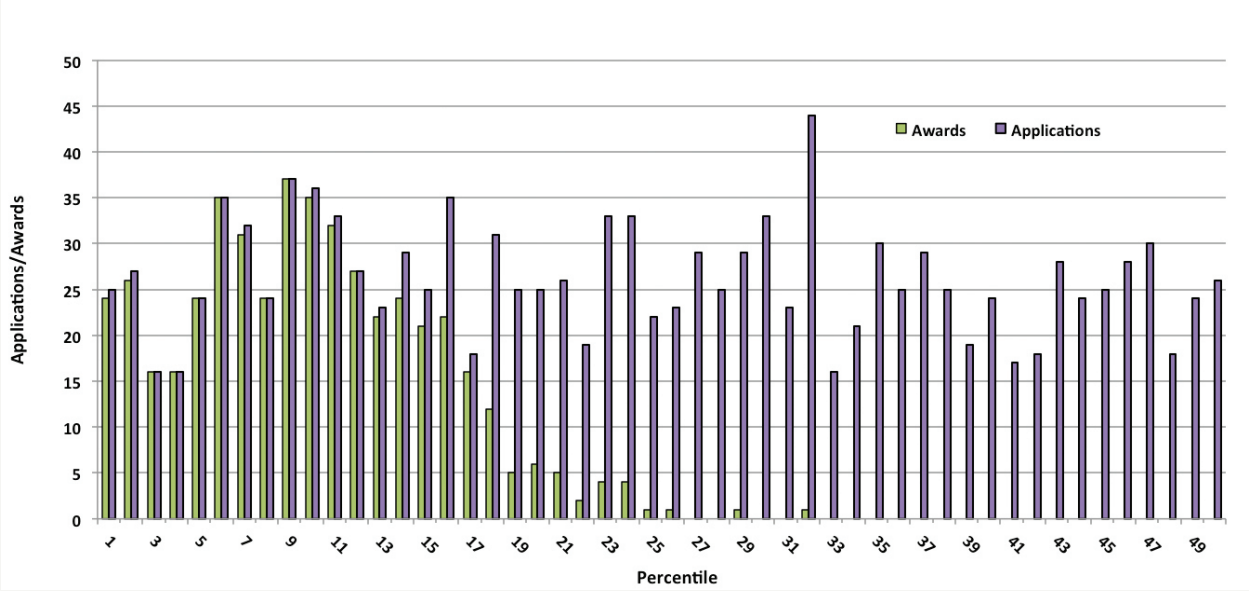
With the exception of Figure 8 (which includes initiative data), the data in the following charts exclude initiatives (*i.e.*, Requests for Applications), grants funded through the *Special Statutory Funding Program for Type 1 Diabetes Research*, and funds appropriated through the American Recovery and Reinvestment Act (ARRA).

GRANT ACTIVITIES

Code	Title	Code	Title
K01	Research Scientist Development Award – Research and Training	R13	Conference
K08	Clinical Investigator Award (CIA)	R15	Academic Research Enhancement Awards (AREA)
K23	Mentored Patient-Oriented Research Career Development Award	R18	Research Demonstration and Dissemination Project
K24	Midcareer Investigator Award in Patient-Oriented Research	R21	Exploratory/Developmental Grant
K25	Mentored Quantitative Research Career Development Award	R24	Resource-Related Research Project
K99	Career Transition Award	R34	Planning Grant
P01	Research Program Project	R37	Method to Extend Research in Time (MERIT) Award
R00	Research Transition Award	SBIR/STTR	Small Business Innovation Research Grants/ Small Business Technology Transfer Grant
R01	Research Project	T32	Institutional National Research Service Award
R03	Small Research Grant		

FIGURE 1

FIGURE 1: NUMBER OF NIDDK COMPETING R01 APPLICATIONS SCORING WITHIN THE TOP 50TH PERCENTILE AND NUMBER OF NIDDK COMPETING R01 APPLICATIONS FUNDED IN FY 2014.

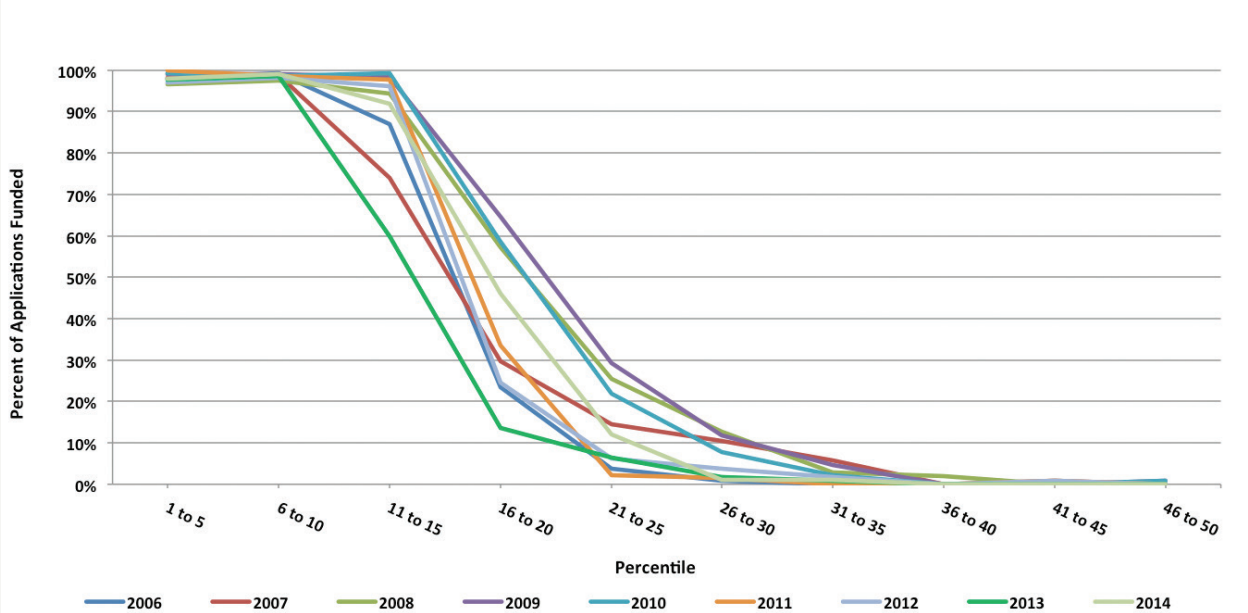


Note: "Applications" shown in the chart above include all applications that scored 50th percentile or better. Unscored applications, scored applications with no percentiles, and applications scoring above the 50th percentile are not shown (46 percent [n=1,137] of the applications received were unscored or scored above the 50th percentile). No unscored applications were funded in FY 2014.

The NIDDK nominal payline in FY 2014 for the vast majority of R01 applications was the 13th percentile for established investigators and the 18th percentile for Early Stage New Investigators. The payline and additional programmatic scrutiny for R01 applications requesting more than $500,000 in direct costs are substantially more stringent. These data show that the NIDDK closely adheres to its payline but does exercise some programmatic discretion to reach for a limited number of especially innovative or programmatically important applications.

FIGURE 2

FIGURE 2: NIDDK COMPETING R01 APPLICATION FUNDING CURVES FOR FY 2006-2014.



To generate the data for Figure 2, applications were placed into "percentile bins" as follows: Bin 1-5 includes all applications with percentile scores from 0.1 to 5.0, Bin 6-10 includes applications with percentile scores from 5.1 to 10.0, *etc*. Only applications that scored 50th percentile or better were included in the analysis.

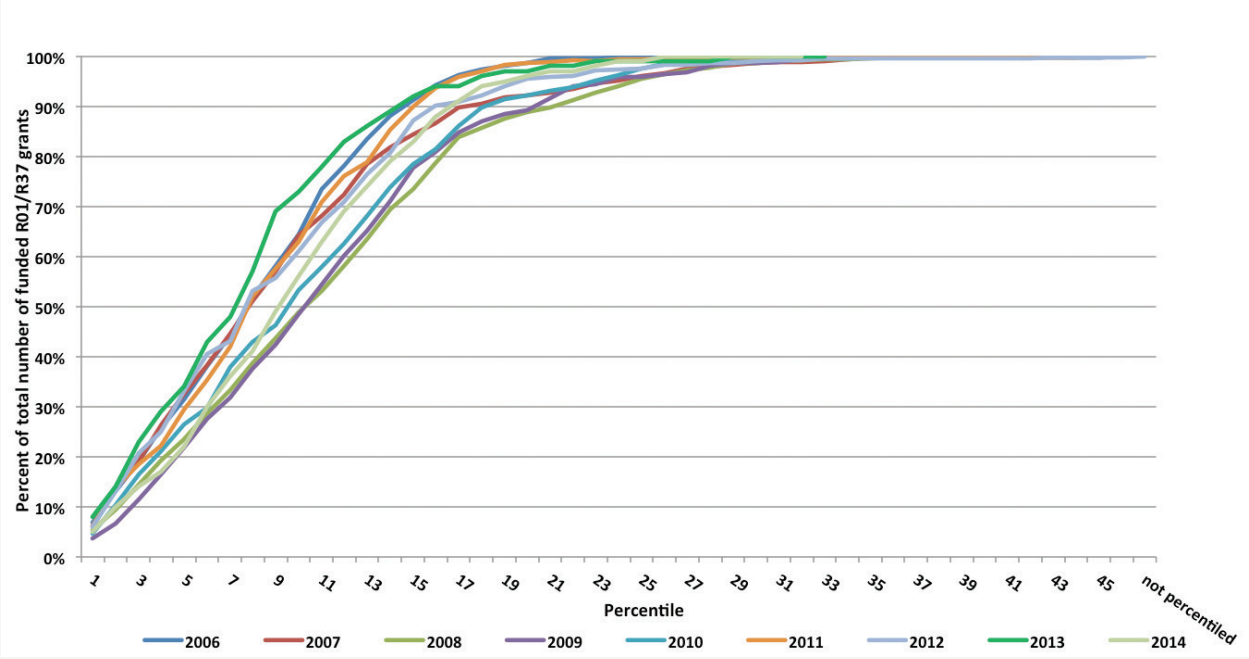
The data demonstrate steep deflections in the percentage of applications funded at the nominal payline for each year. Paylines for the years included in Figure 2 are shown in the table to the right.

Note: In FY 2012, the NIH and the NIDDK began focusing on Early Stage Investigators (ESIs; see definition of and benefits conveyed to ESIs on the NIH "New and Early Stage Investigator Policies" webpage at *http://grants.nih.gov/grants/new_investigators/index.htm*), which is a subset of New Investigators (see also Figures 11 and 12).

Fiscal Year	General Payline	New Investigator*/ Early Stage Investigator Payline**
2006	14	16*
2007	13	15*
2008	17	19*
2009	17	19*
2010	17	19*
2011	15	17*
2012	13	18**
2013	13	18**
2014	13	18**

FIGURE 3

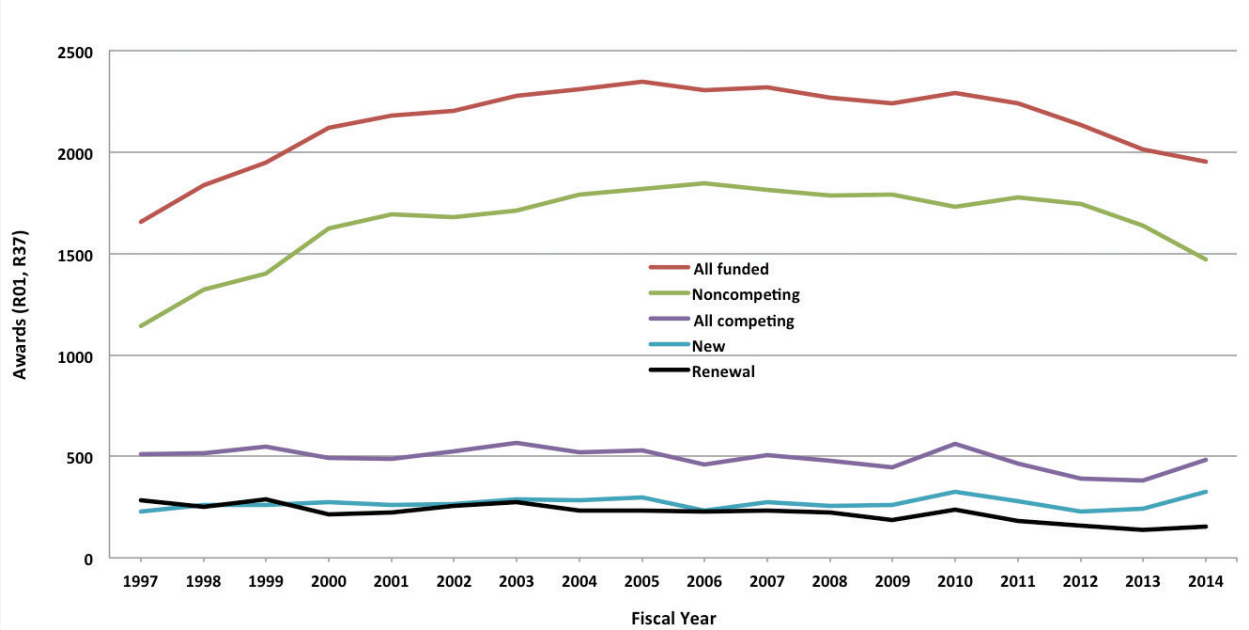
FIGURE 3: CUMULATIVE PERCENTAGE OF R01 AWARDS ACROSS PERCENTILES (FY 2006–2014).



Only funded applications are considered in the data set charted in Figure 3. Percentile bin size equals one percentile and there is no overlap between bins. Percentiles with decimal places were summed into the next highest integral percentile as follows: 0.1 to 0.9 was summed into 1, 1.1 to 1.9 was summed into 2, *etc*. These cumulative funding data again demonstrate that the vast majority of applications funded by NIDDK fall within the payline but that NIDDK does exercise some programmatic discretion to reach for a limited number of especially innovative or programmatically important applications.

FIGURE 4

FIGURE 4: NUMBER OF NIDDK R01 AND R37 GRANTS (COMPETING AND NONCOMPETING) FUNDED IN FY 1997-2014.



Overall, the total number of R01 grants funded by the NIDDK has increased 18 percent since FY 1997. The major portion of this increase occurred during the years of the NIH budget doubling (FYs 1998-2003). Since FY 2005, there has been a decline in the number of grants funded. In general, about half of the competing grants funded by the NIDDK are new (Type 1) awards and half are competing renewals. However, in the past six FYs, competing renewal awards have lagged behind new awards, and the separation between new and competing renewal awards was somewhat more pronounced in FY 2014.

FIGURE 5

FIGURE 5: NUMBER OF COMPETING NIDDK R01 APPLICATIONS (INCLUDING REVISIONS) RECEIVED FOR FUNDING CONSIDERATION IN FY 1998-2014.

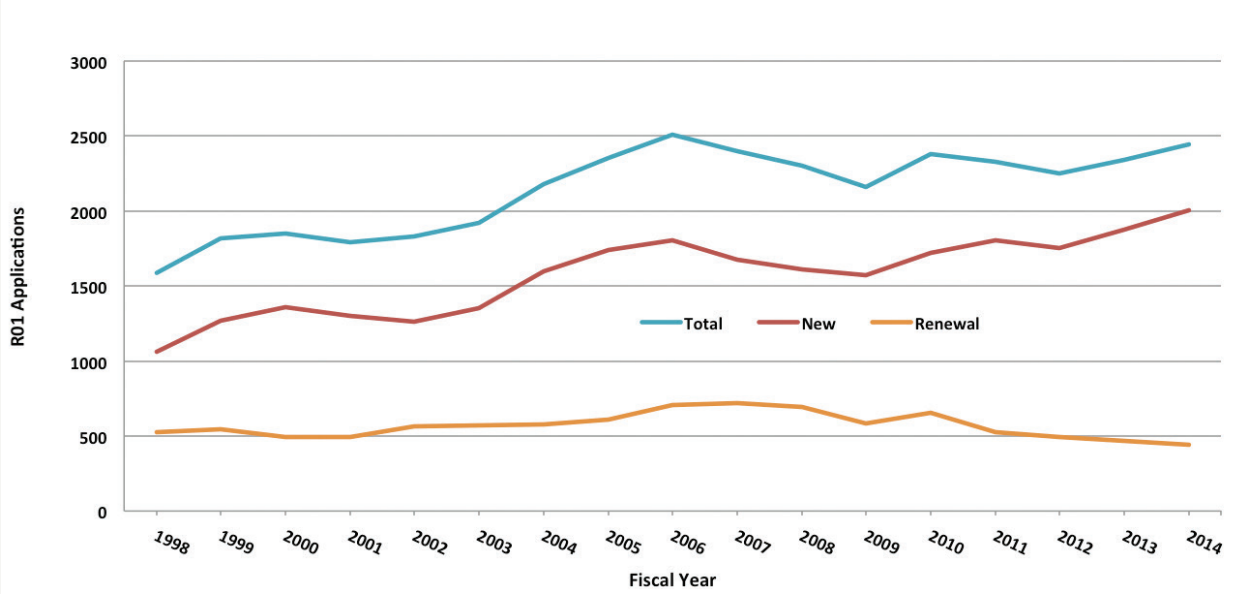


Figure 5 shows a substantial increase in the number of competing R01 applications received by the NIDDK between FY 1998 and 2006. However, the numbers of competing applications have declined slightly since FY 2006. Much of the observed increase between FY 1998 and 2006 was primarily due to new (Type 1) applications. Submission rates for competing renewal applications fluctuated somewhat between FY 1998 and 2014, but since FY 2007 numbers of renewal applications have waned. It should be noted that only one amendment and resubmission of an application was allowed after January 25, 2009. The full implementation of the NIH policy eliminating a second amended application is coincident with a rise in "New" competing R01 applications in FY 2010.

FIGURE 6

FIGURE 6: OVERALL NIDDK EXPENDITURES (INCLUDES DIRECT AND FACILITIES AND ADMINISTRATIVE COSTS) ON R01 AWARDS (COMPETING AND NON-COMPETING) IN FY 1995-2014.

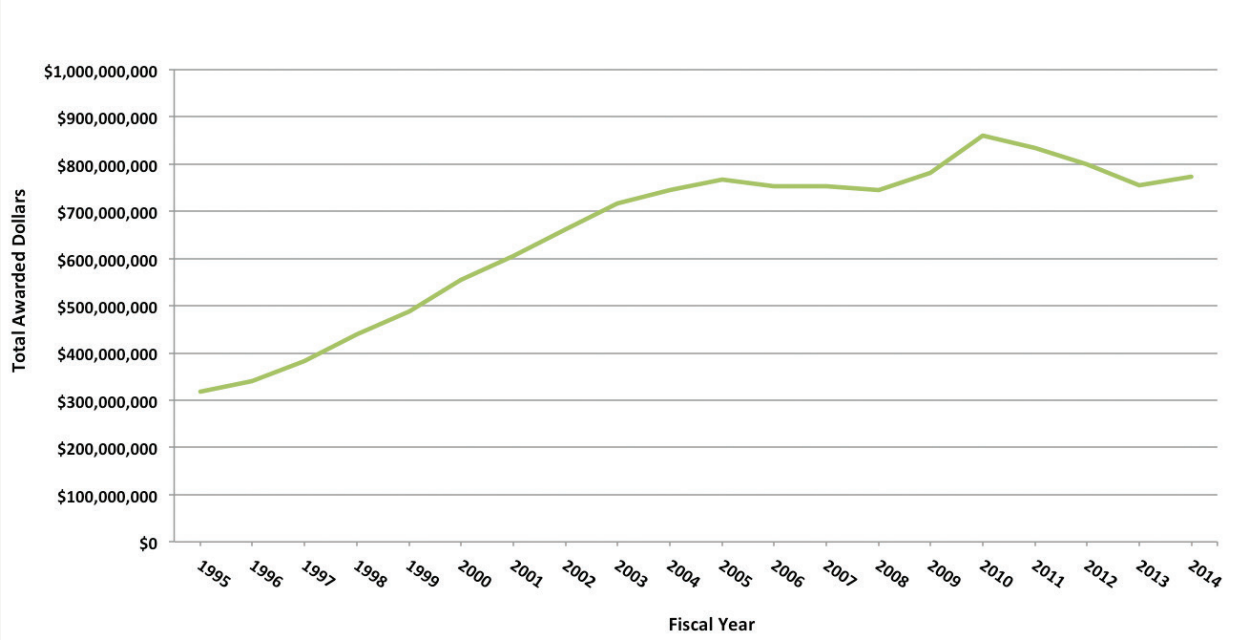


Figure 6 shows that NIDDK expenditures on R01 grants have increased markedly (143 percent) since FY 1995. This is because the NIDDK is funding a larger number of these awards (Figure 4) and also because the median cost of an R01 has increased substantially (Figure 7).

FIGURE 7

FIGURE 7: MEDIAN TOTAL COSTS (INCLUDES DIRECT AND FACILITIES AND ADMINISTRATIVE COSTS) OF NIDDK R01 GRANTS (COMPETING AND NON-COMPETING) IN FY 1995-2014.

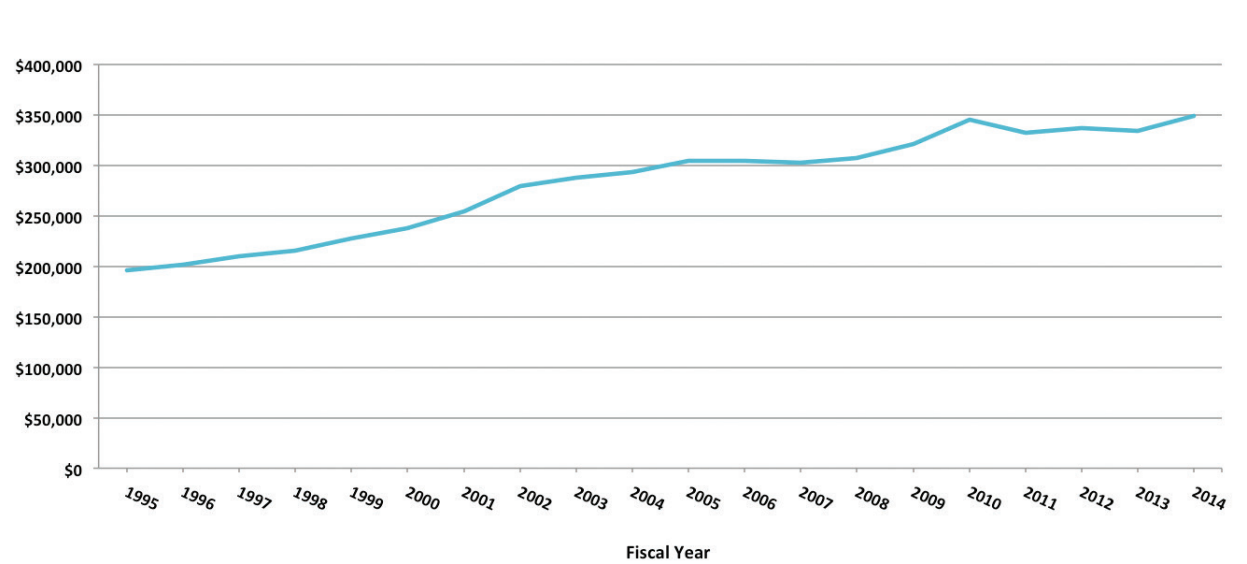


Figure 7 illustrates that the median cost of R01 awards has increased approximately 78 percent since 1995, although there was a slight decrease in FY 2011 compared to FY 2010. In the past ten years (FYs 2005-2014), the number of grants receiving $500,000 or more in total costs has gone from 5 percent of the total number of awards to 17 percent of the total awarded R01s. The number of grants receiving $250,000 or less in total costs has declined from 20 percent of the total awards to 7 percent.

FIGURE 8

FIGURE 8: NIDDK EXTRAMURAL RESEARCH FUNDING BY CATEGORY (COMPETING AND NON-COMPETING).

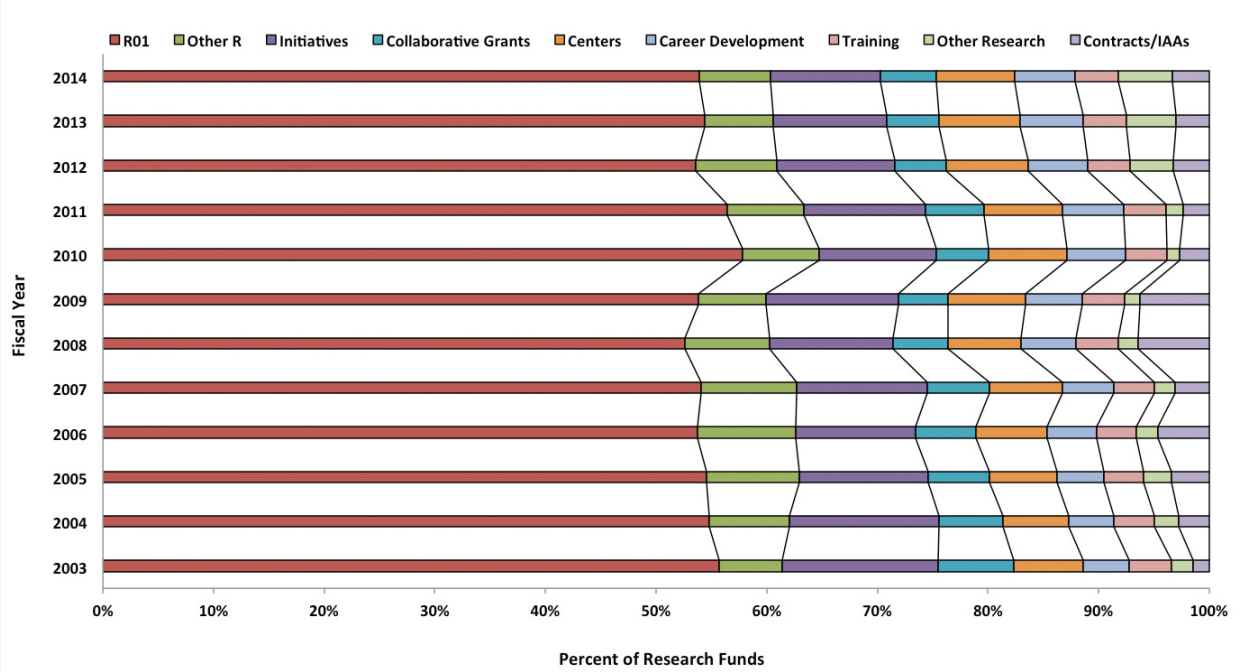


Figure 8 shows that relative funding levels of most NIDDK extramural research categories have remained fairly stable since FY 2003. These data were presented to the NIDDK's Advisory Council in May 2012 in the context of the NIDDK's core values. The NIDDK core values emphasize maintaining a strong investigator-initiated R01 program, preserving a stable pool of talented new investigators, supporting key clinical studies and trials (support is generally represented in the Initiatives and Contracts categories), and continuing strong support of training and career development programs. Figures 9-12 illustrate other examples of how the NIDDK's portfolio has reflected NIDDK core values over time.

NIDDK Portfolio Categories:

- **R01** – Investigator-initiated (excludes R01s responding to NIDDK RFAs)
- **Other R** – Includes other R activities (*i.e.*, R03, R13, R15, R18, R21, R34, SBIR/STTR, *etc*.) but excludes applications submitted to NIDDK RFAs and R24s
- **Initiatives** – Awards made in response to NIDDK RFAs; includes most NIDDK large clinical trials and consortia
- **Collaborative Grants** – P01s and R24s that are not "mini-Centers"
- **Centers** – Includes all non-P01 P awards and R24 "mini-Centers"
- **Career Development** – Includes all Ks (including K99/R00)
- **Training** – Includes all F and T activities
- **Other Research** – Everything not captured in the categories above
- **Contracts and Interagency Agreements (IAAs)** – Includes some large clinical studies

FIGURE 9

FIGURE 9: MAINTAINING A STABLE POOL OF NIDDK INVESTIGATORS: NUMBER OF INVESTIGATORS SUPPORTED BY AT LEAST ONE R01.

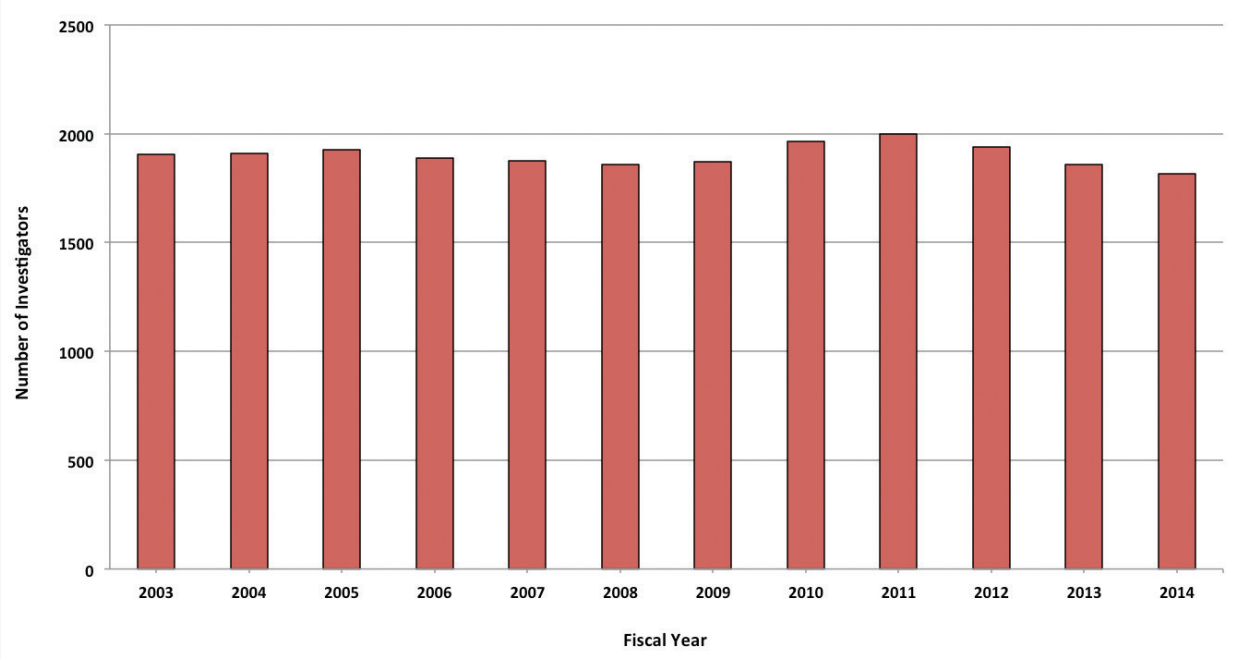


Figure 9 shows that the number of Principal Investigators (PIs) supported by at least one R01 remained relatively stable between FY 2003 and 2009. In FYs 2010 and 2011, there were increases in the numbers of PIs supported with an NIDDK R01. It should be noted that in FY 2008 the NIH, for the first time, began making multiple principal investigator R01 awards to support team science projects. The observed increases in numbers of PIs supported by the NIDDK in FYs 2010 and 2011 are largely attributable to multiple principal investigator R01 awards. The subsequent declines in FYs 2012, 2013, and 2014 are likely due in large part to paylines that became more stringent (*i.e.*, after FY 2011) and inflationary pressures in the context of flat or declining budgets.

FIGURE 10

FIGURE 10: PRESERVING A STABLE POOL OF NEW INVESTIGATORS: NUMBER OF NIDDK NEW INVESTIGATOR R01 APPLICATIONS AND AWARDS.

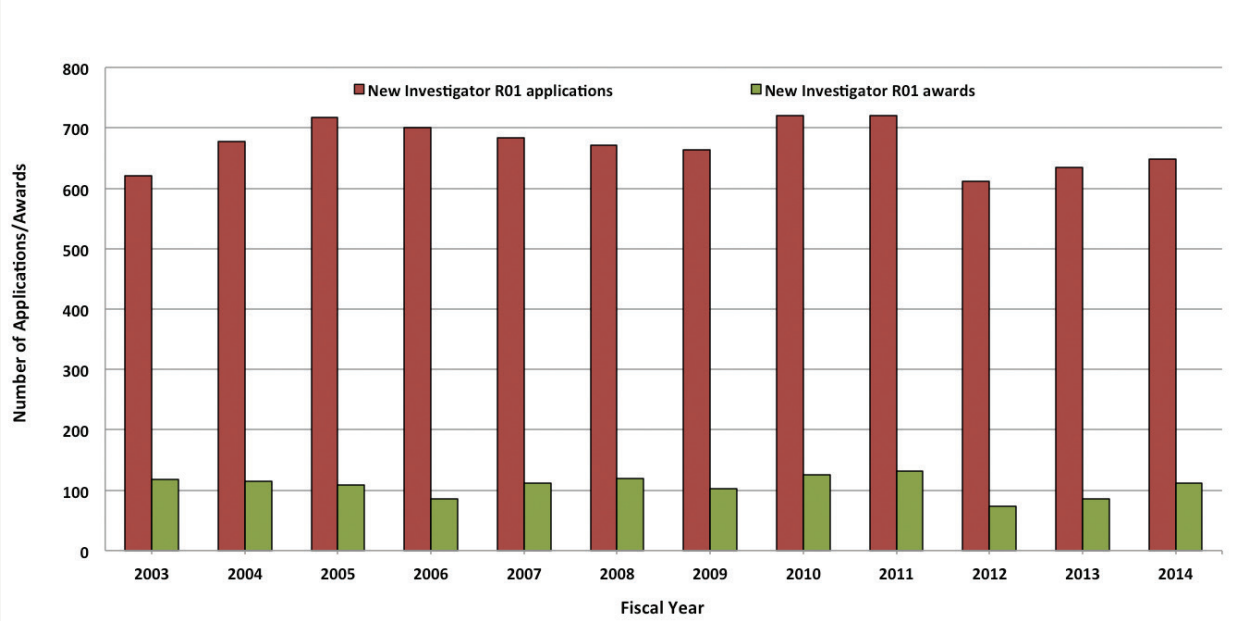
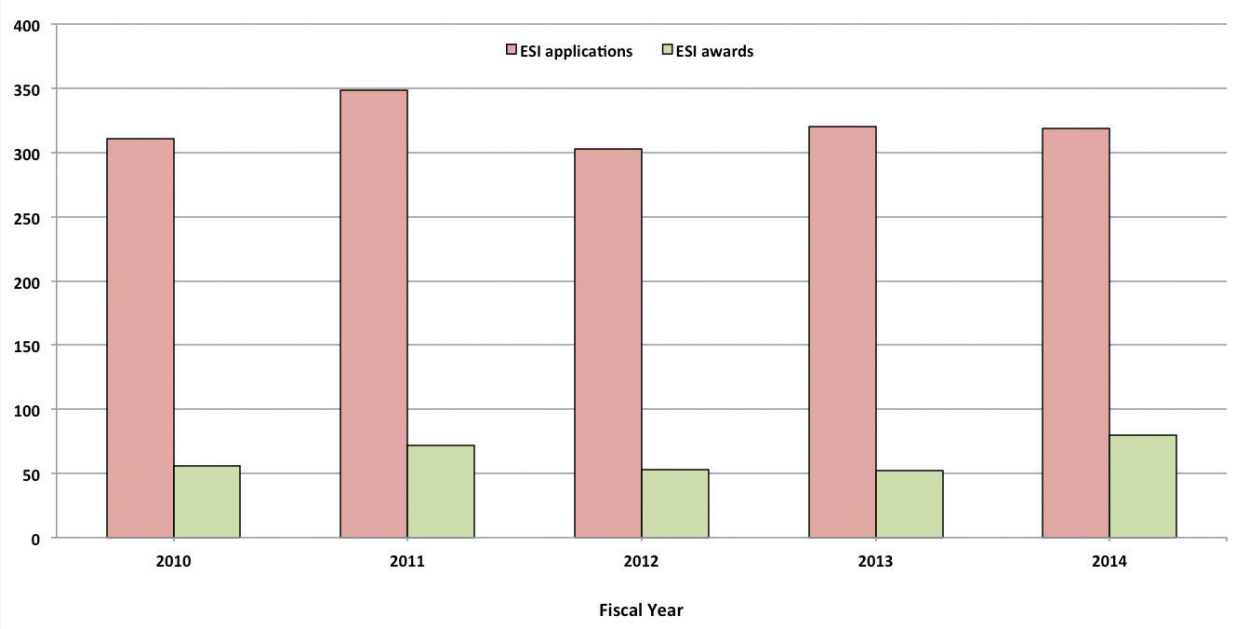


Figure 10 shows that while application rates for New Investigators have remained fairly high, there was a deceleration in the number of New Investigator awards between FY 2003 and 2006. Starting in FY 2007, the NIH and NIDDK established new policies focused on New Investigators, and these policies appear effective in mitigating downward pressures on New Investigator awards. The decrease in number of New Investigator awards in FY 2012 reflects a decrease in the number of applications from New Investigators that year. Numbers of New Investigator applications and awards recovered somewhat in FY 2013 and again in FY 2014. In addition, in FY 2012 the NIH and NIDDK began focusing on Early Stage Investigators (ESIs; see definition of and benefits conveyed to ESIs on the NIH "New and Early Stage Investigator Policies" webpage at *http://grants.nih.gov/grants/new_investigators/index.htm*), which is a subset of New Investigators (see table associated with Figure 2 and Figures 11 and 12). It should be noted that these data count applications and awards, not persons.

FIGURE 11

FIGURE 11: PRESERVING A STABLE POOL OF NEW INVESTIGATORS: NUMBER OF NIDDK EARLY STAGE INVESTIGATOR (ESI) R01 APPLICATIONS AND AWARDS.



Comparison of Figure 10 and 11 shows that while the subset of ESI applications fell in FY 2012 essentially in proportion to the total drop in New Investigator applications, the proportional drop in number of awards to ESIs was not as great. This is attributable in part to the NIDDK's differential payline for ESI applications (see the "Resources for New NIDDK Investigators" webpage at *http://grants.nih.gov/grants/new_investigators/index.htm*). The number of ESI awards in FY 2013 was essentially flat compared with the number of ESI awards in FY 2012, and the number of ESI awards in FY 2014 increased approximately 54 percent compared to FY 2013 ESI award numbers.

FIGURE 12

FIGURE 12: PRESERVING A STABLE POOL OF NEW INVESTIGATORS: PERCENT OF NEW INVESTIGATOR APPLICATIONS AND AWARDS THAT ARE ESI.

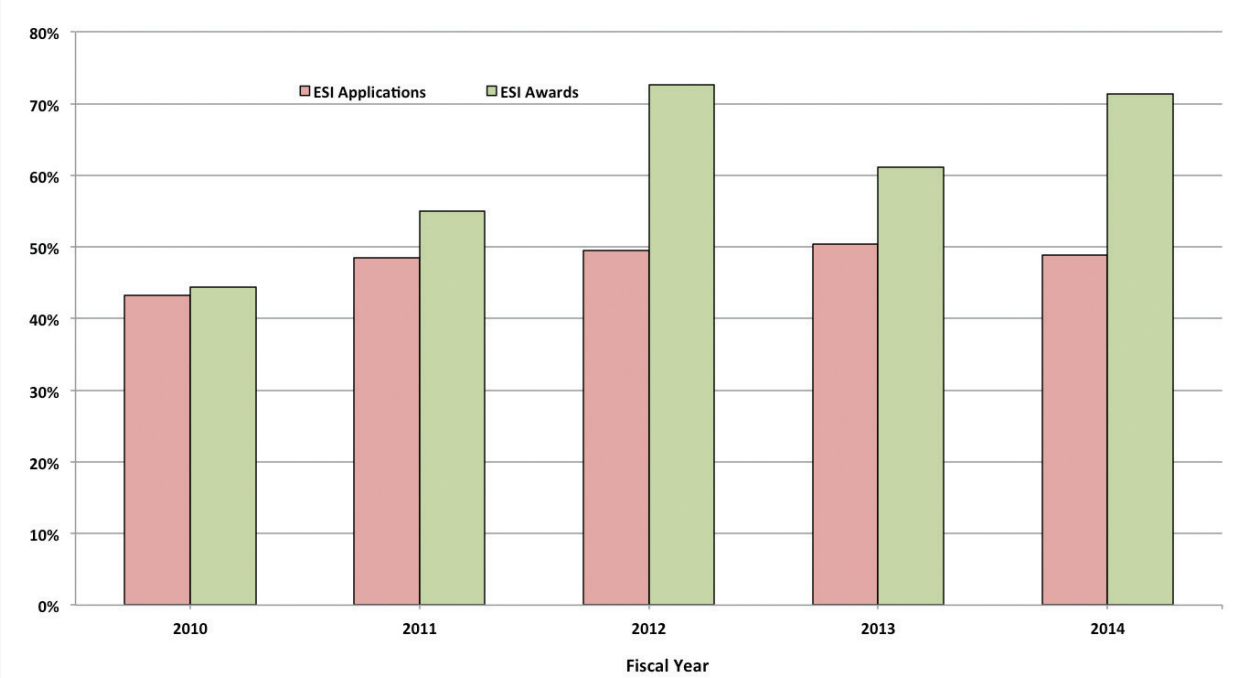


Figure 12 demonstrates that the NIDDK's differential payline for ESIs in FYs 2012 to 2014 (see the "Resources for New NIDDK Investigators" webpage at *http://grants.nih.gov/grants/new_investigators/index.htm*) has been effective in enhancing ESI representation among New Investigator awards.

FIGURE 13

FIGURE 13: SUPPORT PIVOTAL CLINICAL STUDIES AND TRIALS: NIDDK HUMAN SUBJECTS RESEARCH FUNDING AS A PROPORTION OF ALL EXTRAMURAL RESEARCH FUNDING.

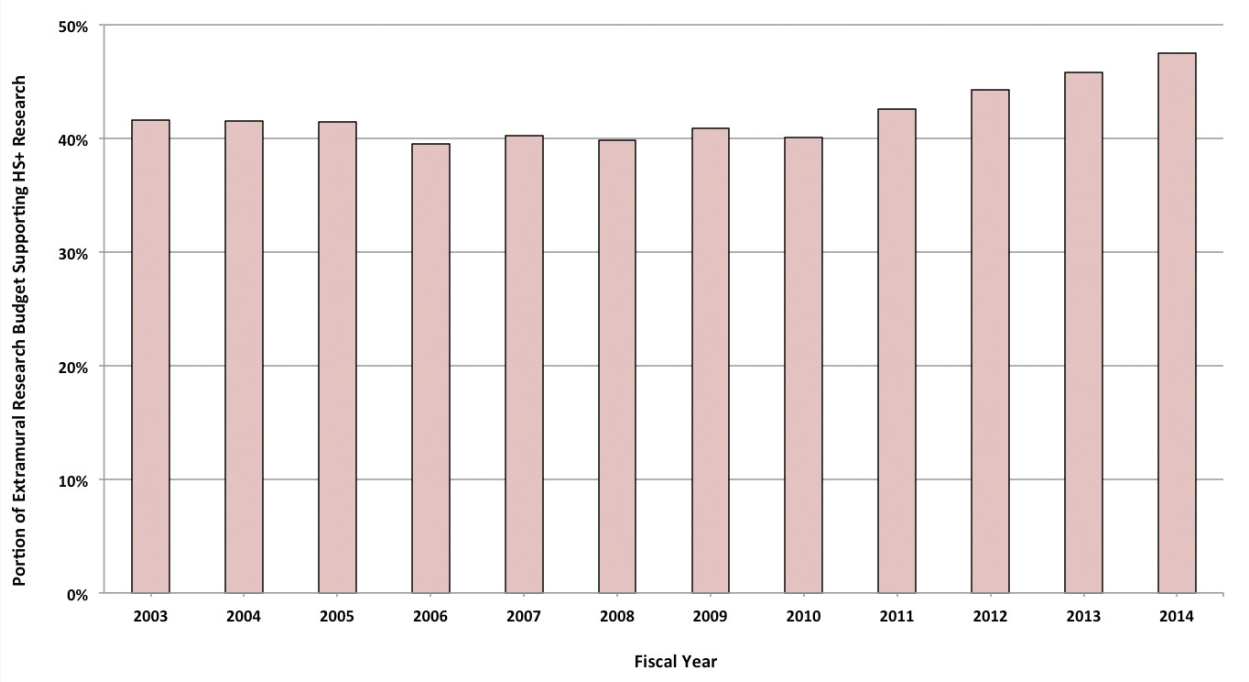


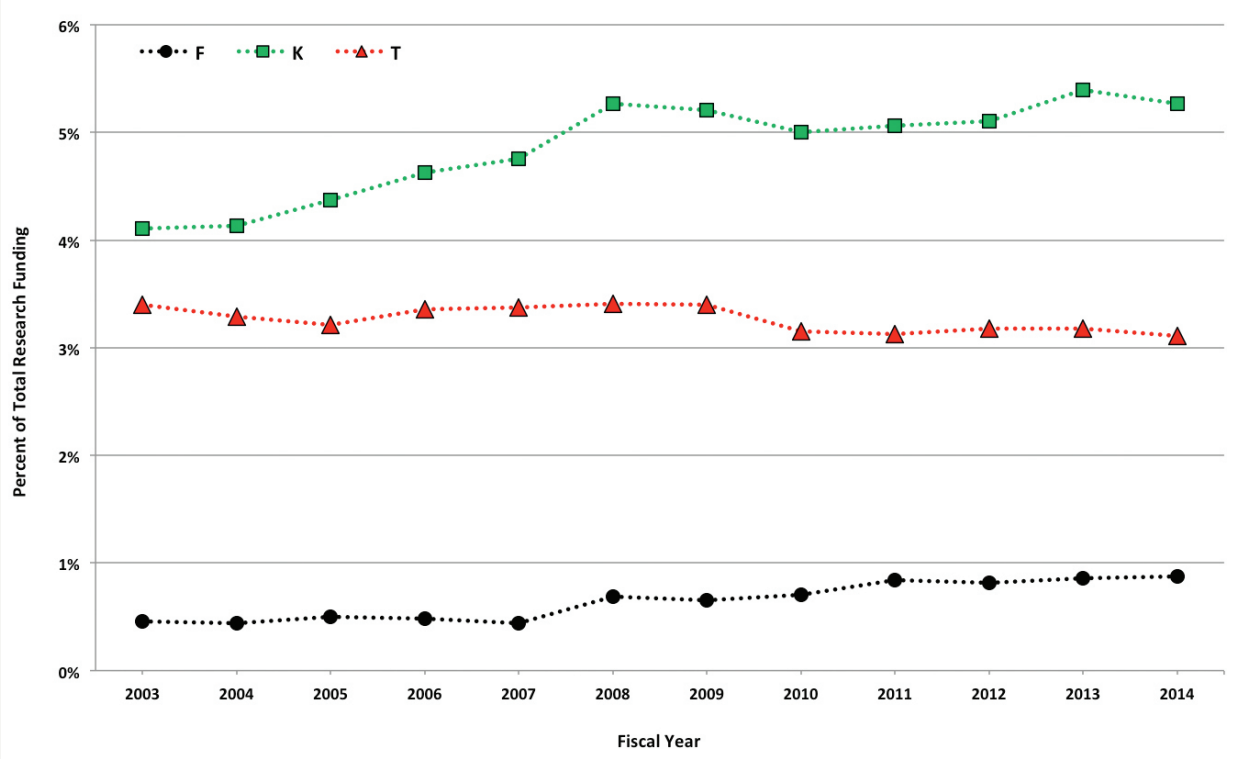
Figure 13 demonstrates that the NIDDK commits a substantial proportion of its research funding to the support of clinical research involving human subjects. For the purpose of this analysis, we used the definition described in Kotchen *et al*, *JAMA* 2004 Feb; 291(7):836-43 and included all studies coded as using Human Subjects (HS+).

FIGURES 14A TO 14D

THE NIDDK IS COMMITTED TO TRAINING THE NEXT GENERATION.

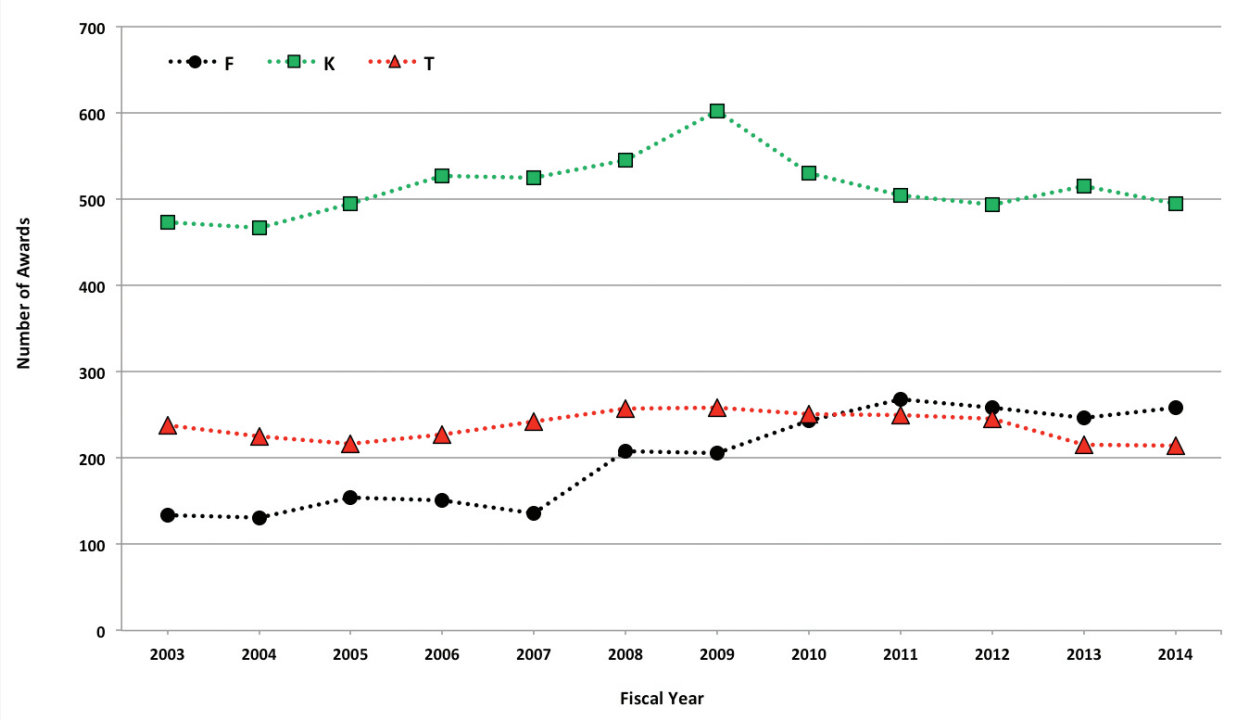
Figures 14A to 14D demonstrate that the NIDDK's commitment to training and developing the careers of the next generation of scientists remains strong. Figure 14A shows that overall support of training and career development programs has increased since FY 2003. By design, there has been a slight deceleration in the number of T awards, but at the same time the number of F awards has increased. Figures 14B and 14D illustrate that the numbers of NIDDK T awards and associated training slots have remained relatively stable. Figure 14C shows that while the numbers of NIDDK K08 (Mentored Clinical Scientist Development Award) awards decreased from FY 2003 to 2014, the numbers of K01 (Mentored Research Scientist Development Award) and K23 (Mentored Patient-Oriented Research Career Development Award) awards have increased. The NIDDK will continue to monitor carefully its training and career development programs to ensure appropriate balance.

FIGURE 14A: NIDDK FELLOWSHIP (F), CAREER DEVELOPMENT (K), AND TRAINING (T) AWARDS AS A PERCENT OF TOTAL RESEARCH FUNDING.



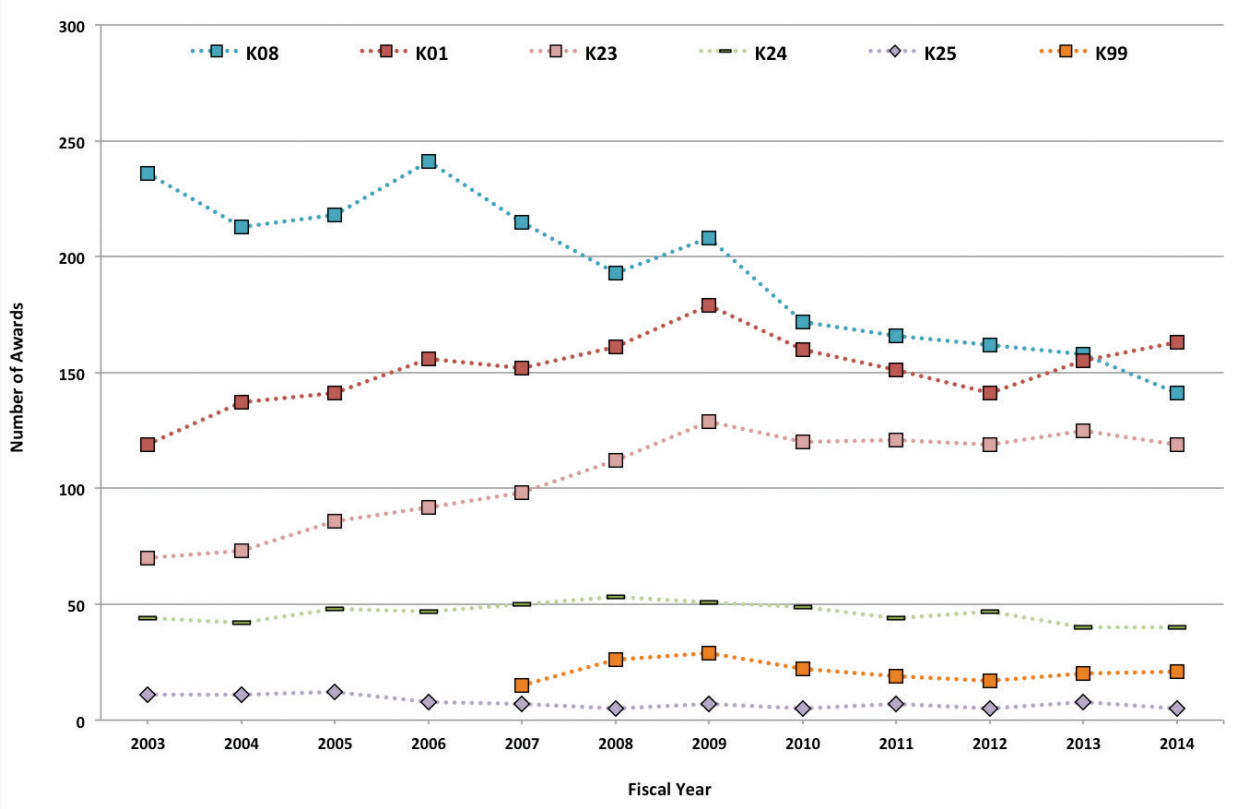
FIGURES 14A TO 14D

FIGURE 14B: NUMBER OF NIDDK FELLOWSHIP (F), CAREER DEVELOPMENT (K), AND TRAINING (T) AWARDS BY FISCAL YEAR.



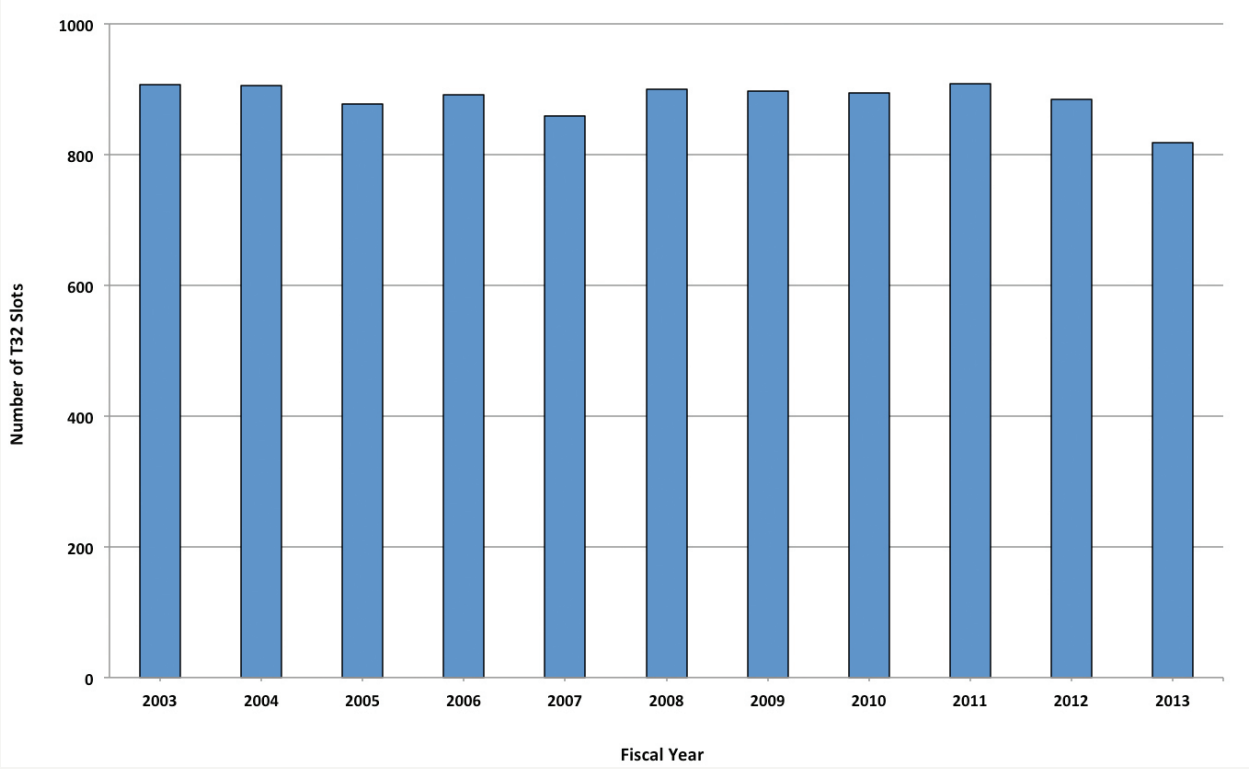
FIGURES 14A TO 14D

FIGURE 14C: NUMBER OF NIDDK CAREER DEVELOPMENT (K) AWARDS BY ACTIVITY AND FISCAL YEAR.



FIGURES 14A TO 14D

FIGURE 14D: NUMBER OF NIDDK TRAINING (T32) AWARD SLOTS BY FISCAL YEAR.



Note: Numbers of training slots are reported at the end of the training budget year (not at the time of award). Therefore, unlike the previous charts, FY 2014 data are not included here.